

Wallace's Acceptance of Darwin's Priority in his own Words

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Introduction

This year marks the 100th anniversary of the death of Alfred Russel Wallace (8 January 1823 – 7 November 1913), the British naturalist and co-discoverer of the theory of evolution by means of natural selection with Charles Darwin. Wallace published a two-volume autobiography in 1905 and an abridged, one-volume edition in 1908. His interesting, scientifically important life has been the subject of several scholarly biographies including: Marchant (1916), George (1964), Williams-Ellis (1966), Raby (2001), Shermer (2002), Fichman (2004), and Slotten (2004). His writings have been included in four anthologies: Beddall (1969), Smith (1991), Berry (2002) and Camerini (2002). An intellectual history of Wallace was edited by Smith and Beccaloni (2008), and the journal of Wallace's 10-month lecture tour through North America in 1886-87, owned by the Linnean Society of London, has recently been published (Smith and Derr, 2013). Cope's (1891) sketch included an elegant woodcut of Wallace (see Fig 5).

Wallace undertook two major expeditions to collect plants and animals in remote, dangerous, and scientifically important frontiers. From 1848 (Fig. 1) to 1852 he explored the Amazon River basin, the first two years in the company of entomologist Henry Walter Bates who stayed until 1859, and later alone. Out of these adventures came Wallace's (1853) *A Narrative of Travels on the Amazon and Rio Negro* and Bates' (1863) *The Naturalist on the River Amazons*. Wallace's experiences prepared his mind for the idea of

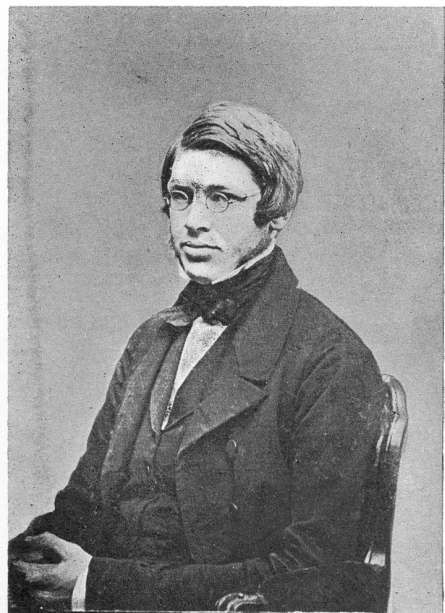


Fig 1. Alfred Russel Wallace in 1848 at age 25 just before he left England for the Amazon. (from *My Life I* : opposite p 266.)

ALFRED R. WALLACE. 1848
(From a daguerreotype)

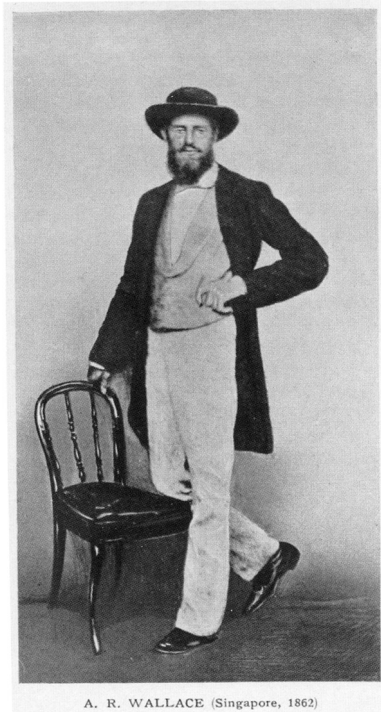


Figure 2. Alfred Russel Wallace in 1862 at age 39 in Singapore on his way home from the Malay Archipelago (from Marchant, 1916, frontispiece).

natural selection, and Bates eventually elaborated his theory of mimicry, now known as Batesian mimicry, a beautiful demonstration of natural selection in action. While returning to England in 1852, Wallace's ship caught fire and sunk and all his specimens and most of his notes were lost. He spent 10 days at sea in an open boat before being rescued (McCalman, 2009).

A lesser man might have been permanently devastated by such loss, but Wallace regrouped after 18 months of lecturing and writing in London.

In a chance encounter, he met Darwin in the insect division of the British Museum in 1854, but this had no effect on either man (Gardiner, 1995; Raby, 2001). Wallace left the comfort of England for Asia where he spent eight years from 1854-1862 (Fig. 2) traveling and collecting throughout the Malay Archipelago. He amassed a staggering 125,600 specimens including 310 mammals, 8,050 birds, 100 reptiles, 7,500 mollusks, 13,100 butterflies and moths, 83,200 beetles, and 13,400 other insects. Over 1000 of these were species new to science (Shermer, 2002). Wallace's (1869a) book *The Malay Archipelago* ranks along with Darwin's (1839) *Journey of Researches* (now known as *The Voyage of the Beagle*) as two of the greatest travel books ever written. The other great book that resulted from Wallace's travel experiences is the two-volume *tour de force* on zoogeography, *The Geographical Distribution of Animals* (1876). In it he outlines the zoogeographical provinces of the earth and explains why animals are found where they are. The boundary between the Asian fauna and the Australian fauna, first proposed by Wallace (1860), is now known as Wallace's Line in recognition of Wallace's role as one of the pioneers of biogeography.

Wallace's observations are still stimulating research. For example, Holt *et al.* (2013) combined geographical ranges and phylogenetic relationships of 6110 amphibian species, 10,074 nonpelagic bird species, and 4853 nonmarine mammals and arrived at 20 distinct zoogeographical regions that could be grouped into 11 larger realms. Wallace's original six zoogeographical realms more or less followed the continental plates. Various authors have explored Wallace's travels and their significance to biology and history: Beddall (1969), Quammen (1996), Severin (1997), van Oosterzee (1997), and McCalman (2009).

While recovering from an attack of malaria in Ternate, Mollucas, sometime in early March 1858, Wallace sent a letter to Darwin with an essay “On the tendency of varieties to depart indefinitely from the original type”. The original letter and essay have not been found (Burkhardt, *et al.* 1991, vol 7: 108). Like Darwin had done 20 years previously, Wallace had read Thomas Malthus’s *An Essay on the Principle of Population*. This led Wallace to the idea of natural selection, just as it had done for Darwin. Darwin had 20 years of data to support the idea; Wallace had “an ingenious speculation” about the mechanism of natural selection (see below Wallace’s letter to Darwin 29 May 1864) but without the supporting evidence. Wallace asked that Darwin read the manuscript and pass it along to Charles Lyell if Darwin considered it significant (Wallace, 1905, 1: 362-3). The reason Wallace sent the letter to Darwin was because of Darwin’s favorable and encouraging response to Wallace’s 1855 paper (Porter, 2012).

This convergence of independently developed ideas, Darwin’s stunned reaction to Wallace’s letter, and Lyell’s and Joseph Dalton Hooker’s solution to whether it was honorable for Charles to publish his idea now that he had Wallace’s essay, have been chronicled in depth by many historians of science including the principal Darwin biographers (Desmond and Moore, 1991; Browne, 2002). The intellectual debt that Darwin owed to those who had gone before him was recently examined by Stott (2012).

A truncated version of the events that followed Darwin’s receipt of Wallace’s letter is as follows (Berra, 2009). Darwin sent Wallace’s essay to Lyell as Wallace requested, on the day he received it, 18 June 1858. Lyell and Hooker were familiar with Darwin’s 20-year unpublished work on natural selection. They hastily arranged a meeting of the Linnean Society where Darwin and Wallace would announce their ideas together. Darwin sent an extract of a sketch of natural selection he had written in 1844 (4 pages, Gardiner, 1995) and an abstract of a letter to Harvard botanist Asa Gray from 5 September 1857 (3 pages, Gardiner, 1995) in which Darwin described natural selection. These items and Wallace’s essay were read before about 30 people at the Linnean Society meeting on 1 July 1858 and published as separate contributions in the *Journal of the Proceedings of the Linnean Society* in August (Darwin and Wallace, 1858). One should not imply that Darwin and Wallace were co-authors of a joint paper; rather, they were individual authors of separate, simultaneous papers.

Some revisionists diminish Darwin’s reputation and character by claiming that Wallace was deprived of credit for the concept and go so far as to accuse Darwin of stealing the idea of natural selection or some aspect of it from Wallace (McKinney, 1972, Brackman, 1980; Brooks, 1984, and Davies, 2008). They claim that Darwin actually received Wallace’s letter at least two weeks before he said he did and was thus able to modify his own work before presenting it with Wallace’s essay. Van Wyhe and Rookmaaker (2012) very cleverly traced the 75-day route taken by the mail steamers that transported Wallace’s letter using newspaper accounts of steamship arrivals and departures. They concluded that Wallace’s letter could not have left Ternate on the 9 March steamer, but had to wait until early April. They say this because Wallace’s letter mentions Darwin’s previous letter of 22 Dec. 1857. Given the 77 day transit time from England to Ternate, Darwin’s letter would have reached Wallace upon the arrival of the 9 March 1858 steamer. This would not leave enough time for Wallace

to get his new letter back on the steamer for a departure that same day. Gardiner (1995) speculated that Wallace's letter was probably posted between 5-19 March. Assuming that Wallace's letter was at the Ternate post office before 25 March, the next mail steamer, *Makasser*, would have picked it up about 5 April 1858, and the letter would have arrived in Surabaya on 20 April. The mail steamer *Banda* took the letter to Jakarta on 23 April, then on to Singapore on 30 April. The Peninsular & Oriental steamship *Pekin* left Singapore with the letter on 1 May. It arrived in Galle on 10 May, and the letter departed on the P & O steamer *Nemesis* on 14 May, arriving in Suez on 3 June. Mail from the *Nemesis* was transported overland in Egypt by camel and boats to Alexandria and arrived there on 4 June. The P & O steamship *Colombo* left Alexandria with the mail on 5 June, stopped at Malta and Gibraltar and arrived at Southampton on 16 June. The letter went via train to the general post office in London on 17 June and was delivered to Down House on 18 June, just as Darwin said (Van Wyhe and Rookmaaker (2012)!

Davies (2012) constructed a shipping scenario that allowed Wallace's letter to have made the 9 March departure which would allow its arrival at Down House on 3 June. Given the indisputable fact that in 1844 Darwin had already written a 230 page, 52,000 word essay on natural selection that contained multi-faceted evidence, shown it to Hooker (who annotated it in his own hand), and discussed the concept in correspondence with Asa Gray, it defies common sense to say that Darwin lifted the idea of natural selection from Wallace's brief essay.

It is certainly true that Wallace has been overshadowed by Darwin, and some of this may be due to the fact that Darwin was part of the upper class scientific establishment and Wallace was relatively poor and self-educated. But Darwin earned his dominance and prominence by the wealth of data presented in *Origin of Species* (Darwin, 1859). It was a popular and scientific success and forever linked Darwin's name with the subject. Darwin did, however, omit acknowledgment of Wallace in the [summary of the]* first edition of the *Origin*, but compensated for this inadvertent omission on p 484 of the second edition (Burkhardt, *et al.* 1993 vol. 8: 29). Biologists and historians of science recognize that Wallace did come up with the idea of natural selection independently from Darwin and quite willingly credit Wallace as co-discover of natural selection with Darwin. However, Wallace did not help his case by his involvement in spiritualism, séances and communication with the dead, and advocacy of the anti-vaccination movement (Wallace, 1905). These things hurt his scientific acceptability even though he made great contributions to evolution and biogeography. * *Wallace is acknowledged on p1-2 of first edition.*

Darwin and Wallace had areas of disagreement such as dispersal vs land bridges; the relative importance to each sex of protective coloration, sexual selection and natural selection; the role of natural selection in forming the mind of man, etc. But they were always friendly and cordial to one another. Their letters are laced with details of their family lives, an exchange of photographic portraits, news of health issues, etc. (Burkhardt, *et al.* 1985-2012). Wallace was a frequent visitor to Down House. Darwin's daughter Elizabeth wrote to her sister Henrietta about the Wallaces's 12 September 1868 visit to Down House and pronounced Mr Wallace "very pleasant" (Berra, 2013). Darwin also called on Wallace when he went to London.

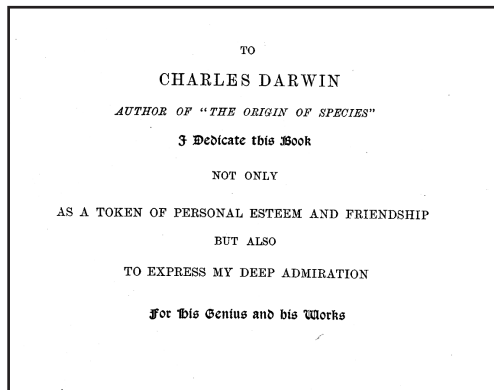


Figure 3. Dedication of Wallace's *Malay Archipelago* (1869) to Darwin.

Darwin was instrumental in arranging a pension for his monetarily less fortunate friend. Wallace was in financial strife. His only income was from books and failing investments. He considered applying for jobs as registrar, curator or librarian at the College of Science. He confided his anxieties to Lyell's former secretary, Miss Buckley, who notified Darwin. Darwin and Huxley petitioned Prime Minister Gladstone, requesting recognition of Wallace's service to science. With letters of support from 12 others, Queen Victoria conferred a pension of £200 annually upon Wallace. Wallace received the first payment in 1881. At age 58, Wallace finally had financial security for life, thanks in large part to Darwin (Wallace, 1908: 374-5).

Charles Darwin died of heart disease on 19 April 1882 and was buried in Westminster Abbey at the request of 20 members of parliament on 26 April. Pallbearers included Wallace, Hooker, Huxley, and Lubbock (Berra, 2009).

Darwin's major biographers, Desmond and Moore (1991) and Browne (2002), who have made a thorough examination of his life, do not give much credence to the unsubstantiated revisionist view that Darwin somehow plagiarized from Wallace. However, the best evidence that Darwin conducted himself as a gentleman and behaved honorably comes from Wallace himself. The following writings show that Wallace, in his own words, felt privileged to be included along with Darwin as co-discover of natural selection. He dedicated *The Malay Archipelago* to Darwin in 1869 (Fig. 3). Wallace greatly admired what Darwin had accomplished and did not feel cheated in any way. Wallace even used the word *Darwinism*, a term coined by Huxley (1860: 569), as the title for his 1889 book (Fig. 4). If Wallace had been intellectually cuckolded by Darwin, why would he not recognize it?

The extensive Darwin-Wallace Correspondence began with a letter from Darwin to 21 collectors around the world, including Wallace who left for the East Indies in 1854, asking for specimens of domestic poultry, pigeons, etc. This request reached Wallace in February 1856 via his agent (Gardiner, 1995). The following letters and writings have been extracted from the 19 published volumes of *The Correspondence of Charles Darwin* (Burkhardt, *et al.* 1985-2012) and both versions of Wallace's autobiography. Wallace's bibliography has been compiled by Shermer (2002).

In their own words

Edward Blyth → CD: 8 Dec. 1855

- “What think you of Wallace’s [1855] paper in the *Ann. M. N. H.*? Good! Upon the whole!
- [CD’s marginal notes:] “Uses my simile of tree – It seems all creation with him...he puts facts in striking point of view – Argues against our geological perfect knowledge - - Explains Rudimentary organs...& I quite agree”

Darwin → Wallace: 1 May 1857

- [Wallace letter of 10 Oct. 1856 from Celebes received late April 1857, but lost.]
- “By your letter & even still more by your paper in *Annals*...I can plainly see that we have thought much alike & to a certain extent have come to similar conclusions...I agree to the truth of almost every word of your paper;”
- “This summer will make the 20th year (!) since I opened my first -note-book, on the question how & in what way do species & varieties differ from each other.– I am now preparing my work for publication, but I find the subject so very large, that though I have written many chapters, I do not suppose I shall go to press for two years.—”

Wallace → Darwin: 27 Sept. 1857

- “...I had begun to be a little disappointed that my paper had neither excited discussion nor even elicited opposition.”

Darwin → Wallace: 22 Dec. 1857

- “You say that you have been somewhat surprised at no notice having been taken of your paper in the *Annals*. I cannot say that I am; for so very few naturalists care for anything beyond the mere description of species. ...two very good men, Sir C. Lyell & M^r. E. Blyth at Calcutta specially called my attention to it. Though agreeing with you..., I believe I go much further than you;”
- “My work, on which I have now been at work more or less for 20 years, will *not* fix or settle anything; but I hope it will aid by giving a large collection of facts with one definite end.”
- “...you have my very sincere & cordial good wishes for success of all kinds: & may all your theories succeed, except that on oceanic islands, on which subject I will do battle to the death.” [ARW’s land bridges vs CD’s dispersal]

Wallace → Bates: 4 January 1858

- “I have been much gratified by a letter from Darwin, in which he says that he agrees with ‘almost every word’ of my paper [Wallace 1855]. He is now preparing his great work on ‘Species and Varieties,’ for which he has been collecting materials twenty years. He may save me the trouble of writing more on my hypothesis, by proving that there is no difference in nature between the origin of species and of varieties; or he may give me trouble by arriving at another conclusion; but at all events, his facts will be given for me to work upon.” [*My Life*, 1905 I:358]

Wallace’s description of his letter to Darwin from Ternate early March 1858 as he remembered it 50 years later. [Original lost.]

- “The more I thought over it the more I became convinced that I had at length found the long-sought-for law of nature that solved the problem of the origin of species....I waited anxiously for the termination of my fit [malaria] so that I might at once make notes on the subject....That same evening I did this pretty fully, and on the two succeeding

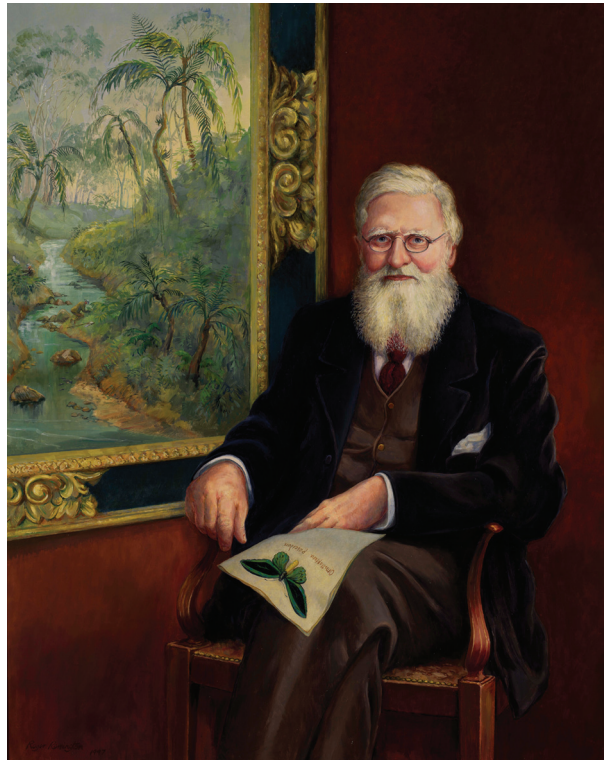


Figure 4. Oil on canvas portrait of Alfred Russel Wallace by Roger Remington (1998) based on all available photographs of Wallace. This portrait is on display in the meeting room of the Linnean Society alongside John Collier's well-known 1883 oil painting of Charles Darwin. The Wallace portrait was commissioned to have exactly the same dimensions (127 x 102 cm [50 x 40 in]) as the Darwin portrait to give equal prominence to the co-discoverers of natural selection. The book on Wallace's knee depicts a male birdwing butterfly, *Ornithoptera poseidon*, now known as *O. priamus* (Linnaeus, 1758). The painting-within-the-painting shows Wallace as a small figure at streamside with a butterfly net. The importance of Wallace's butterfly studies has been detailed by Mallett (2009). Portrait used by permission of the Linnean Society of London.

evenings wrote it out carefully in order to send it to Darwin by the next post, which would leave in a day or two. I wrote a letter to him in which I said that I hoped the idea would be as new to him as it was to me,I asked him if he thought it sufficiently important to show to Sir Charles Lyell, who had thought so highly of my former paper.” [My Life, 1905: 362-3]

Darwin → Lyell: 18 June 1858

- “Some year or so ago, you recommended to me to read a paper by Wallace in the Annals He has to day sent me the enclosed & asked me to forward it to you....Your words have come true with a vengeance that I sh^d. be forestalled. ...I never saw a more striking coincidence, if Wallace had my M.S. sketch written out in 1842 he could not have made a better short abstract! Even his terms now stand as Heads of my Chapters.
- Please return me the M.S. which he does not say he wishes me to publish; but I shall of course at once write & offer to send to any Journal. So all my originality, whatever it

may amount to, will be smashed. Though my Book, if it will ever have any value, will not be deteriorated; as all the labour consists in the application of the theory.

- I hope you will approve of Wallace's sketch, that I may tell him what you say."

Darwin → Lyell: 25 June 1858

- "There is nothing in Wallace's sketch which is not written out much fuller in my sketch copied in 1844, & read by Hooker some dozen years ago. About a year ago I sent a short sketch ... to Asa Gray, so that I could most truly say & prove that I take nothing from Wallace. I sh^d. be *extremely* glad **now** to publish a sketch of my general views.... But I cannot persuade myself that I can do so honorably."
- "But as I had not intended to publish any sketch, can I do so honourably because Wallace has sent me an outline of his doctrine? – I would far rather burn my whole book than that he or any man sh^d think I had behaved in a paltry spirit. "
- P.S. [26 June] It seems hard on me that I should be thus compelled to lose my priority of many years standing, but I cannot feel at all sure that this alters the justice of the case."

Darwin → Hooker: 29 June 1858

- [CD reported death of his baby, Charles Waring Darwin, on 28 June, from scarlet-fever. Letter sent in morning.]
- "But I can see that you have acted with more kindness & so has Lyell even than I could have expected from you both most kind as you are." [Hooker & Lyell proposed they submit Wallace's paper with extracts of CD's writings to Linnean Society as joint papers.]
- "I have just read your letter, & see you want papers at once. I am quite prostrated & can do nothing but I send Wallace & my abstract of abstract of letter to Asa Gray.... I dare say it is all too late. I hardly care about it.... I send my sketch of 1844 **solely** that you may see by your own handwriting that you did read it."
- "I really cannot bear to look at it. – Do not waste much time. It is miserable in me to care at all about priority. –"
- Enclosed [Wallace: 'On the tendency of varieties to depart indefinitely from the original type'; CD's abstract of Letter to Asa Gray; CD's extract of essay of 1844 annotated in Hooker's handwriting.]

J. D. Hooker & Charles Lyell → Linnean Society 30 June 1858

- "The accompanying papers, which we have the honour of communicating to the Linnean Society, and which all relate to the same subject, viz. the Laws which affect the Production of Varieties, Races, and Species, contain the results of the investigations of two indefatigable naturalists, Mr. Charles Darwin and Mr. Alfred Wallace."
- "These gentlemen having, independently and unknown to one another, conceived the same very ingenious theory to account for the appearance and perpetuation of varieties and specific forms on our planet may both fairly claim the merit of being original thinkers in this important line of inquiry; but neither of them having published his views, though Mr. Darwin has for many years past been repeatedly urged by us to do so, and both authors having now unreservedly placed their papers in our hands, we think it would best promote the interest of science that a selection from them should be laid before the Linnean Society."

Darwin → Hooker: 13 July 1858

- "I always thought it very possible that I might be forestalled, but I fancied that I had

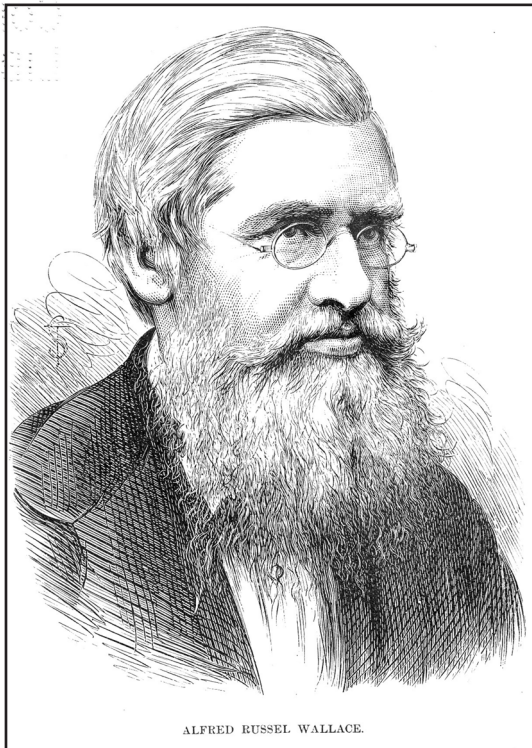
grand enough soul not to care; but I found myself mistaken & punished; I had, however, quite resigned myself & had written half a letter to Wallace to give up all priority & sh^d certainly not have changed had it not been for Lyell's & yours quite extraordinary kindness....I am **much** *more* than satisfied at what took place at Linn. Soc^y."

Wallace → his Mother: 6 Oct. 1858

- "I have received letters from Mr. Darwin and Dr. Hooker, two of the most eminent naturalist in England, which have highly gratified me. I sent Mr. Darwin an essay on a subject upon which he is now writing a great work. He showed it to Dr. Hooker and Sir Charles Lyell, who thought so highly of it that they had it read before the Linnean Society. This insures me the acquaintance of these eminent men on my return home." [My Life, 1905 I: 365]

Wallace, My Life 2nd ed 1908

- "Both Darwin and Dr. Hooker wrote to me in the most kind and courteous manner, informing me of what had been done, of which they hoped I would approve. Of course I not only approved, but felt that they had given me more honour and credit than I deserved, by putting my sudden intuition-...on the same level with the prolonged labours of Darwin, who had reached the same point twenty years before me, and had worked continuously during that long period in order that he might be able to present the theory to the world with such a body of systematized facts and arguments as would almost compel conviction."
- "I think...that I may have the satisfaction of knowing that by writing my article and sending it to Darwin, I was the unconscious means of leading him to concentrate himself on the task of drawing up what he termed an 'abstract' of the great work he had in preparation,...the celebrated 'Origin of Species'...."



Wallace → Hooker: 6 Oct. 1858

- "Allow me in the first place sincerely to thank yourself & Sir Charles Lyell for your kind offices on this occasion.... I cannot but consider myself a favoured party in this matter, because it has hitherto been too much the practice in cases of this sort to impute *all* the merit to the first discoverer of a new fact or a new theory, & little or none to any other party who may, quite independently, have arrived at the same result a few years or a few hours later."

Figure 5. Woodcut of Alfred Russel Wallace published in *Popular Science Monthly*, 11 June 1877 opposite p.129 and reproduced in Cope (1891).

- “It would have caused me much pain & regret had Mr. Darwin’s excess of generosity led him to make public my paper unaccompanied by his own much earlier & I doubt not much more complete views on the same subject, & I must again thank you for the course you have adopted, which while strictly just to both parties, is so favorable to myself.”

Darwin → Wallace: 25 Jan. 1859

- “I was extremely much pleased at receiving three days ago your letter to me & that to Dr. Hooker. Permit me to say how heartily I admire the spirit in which they are written. Though I had absolutely nothing to do in leading Lyell & Hooker to what they thought a fair course of action, yet I naturally could not but feel anxious to hear what your impression would be.”

Darwin → Wallace: 6 April 1859

- “P.S. [to letter describing progress on *Origin*] You cannot tell how I admire your spirit, in the manner in which you have taken all that was done about publishing our papers. I had actually written a letter to you, stating that I would *not* publish anything before you had published. I had not sent the letter to the Post, when I received one from Lyell & Hooker, *urging* me to send some M.S. to them, & allow them to act as they thought fair & honourably to both of us.”

Darwin → Wallace: 13 Nov. 1859

- “I have told Murray [Darwin’s publisher] to send you by Post... a copy of my Book... I sh^d very much like to hear your general impression of the Book as you have thought so profoundly on subject & in so nearly same channel with myself. ...Remember it is only an abstract & very much condensed. God knows what the public will think... I do not think your share in the theory will be overlooked by the real judges as Hooker, Lyell, Asa Gray, & c.”

Darwin → Lyell: 10 Jan. 1860

- “As yet only two things have annoyed me; those confounded millions of years... & my not having by inadvertence mentioned Wallace towards close of Book in summary, – not that anyone has noticed this to me. – I have now put Wallace’s name at 484 in conspicuous place.”

The *Origin*, 2d ed., pp.484-5

- “When the views advanced by me in this volume, and by Mr. Wallace in the Linnean Journal, or when analogous views on the origin of species are generally admitted, we can dimly foresee that there will be a considerable revolution in natural history.”

Darwin → Wallace: 18 May 1860

- “I received this morning your letter from Amboyna dated Feb. 16th, containing some remarks & your too high approbation of my book. Your letter has pleased me very much & I most completely agree with you on the parts which are strongest and weakest of all;” [Wallace’s letter has not been found.]

Wallace → G. Silk: 1 Sept. 1860

- [Re: *Origin*] “I have read it through five or six times, each time with increasing admiration. It will live as long as the ‘Principia’ of Newton... Mr. Darwin has given the world a *new science*, and his name should, in my opinion, stand above that of every philosopher of ancient and modern times. The force of admiration can no further go!!!” [My Life, 1905 I: 372.]

Wallace → Bates: 24 Dec. 1860

- “I know not how, or to whom, to express fully my admiration of Darwin’s book. To him it would seem flattery, to others self-praise; but I do honestly believe that with however much patience I had worked and experimented on the subject, I could *never have approached* the completeness of his book, its vast accumulation of evidence, its overwhelming argument, and its admirable tone and spirit.
- I really feel thankful that it has *not* been left to me to give the theory to the world. Mr. Darwin has created a new science and a new philosophy; and I believe that never has such a complete illustration of a new branch of human knowledge been due to the labours and researches of a single man.
- Never have such vast masses of widely scattered and hitherto quite unconnected facts been combined into a system and brought to bear upon the establishment of such a grand and new and simple philosophy.” [*My Life*, 1905 I: 374.]

Darwin → Bates: 3 Dec. 1861

- “Some are born with a power of good writing, like Wallace; others like myself & Lyell have to labour very hard & slowly at every sentence....I was a *little* disappointed in Wallace’s Book on the Amazon; hardly facts enough....Many thanks for Wallace’s letter; he rates me much too highly & himself much too lowly....But what strikes me most about Mr. Wallace is the absence of jealousy towards me: he must have a really good honest & noble disposition. A far higher merit than mere intellect.”

Darwin → Hooker: 9 May 1863

- “I do not believe there are above half-a-dozen real downright believers in modification of Species in all England: certainly not more who speak out. The only honest downright ‘flat-footed’ men in all England!!! Darwin, Hooker, Huxley, Wallace, Lubbock, Bates.”

Hooker → Darwin: 14 May 1864

- “I have just received Wallace’s [1864] anthropological paper & read ½ & am amazed at its excellence... I am struck too with his negation of all credit or share in the Natural Selection theory – which makes me think him a very high-minded man. I am burning to know your opinion of the paper.

Darwin → Hooker: 22 May 1864

- “I have now read Wallace’s paper on Man, & think it **most** striking & original & forcible;... I quite agree about his high-mindedness, & have long thought so; but in this case it is too far & I shall tell him so. – I am not sure that I *fully* agree with his views about man; but there is no doubt, in my opinion, on this remarkable genius shown by this paper.”

Darwin → Wallace: 28 May 1864

- “...but you ought not in the Man paper to speak of the theory as mine; it is just as much yours as mine. One correspondent has already noticed to me your “high-minded” conduct on this head.
- The great leading idea is quite new to me, viz that during late ages the mind will have been modified more than the body; yet I had got as far as to see with you that the struggle between the races of man depended entirely on intellectual & *moral* qualities.”

Wallace → Darwin: 29 May 1864

- “You are always so ready to appreciate what others do, & especially to overestimate my desultory efforts, that I can not be surprised at your very kind & flattering remarks on my papers.”

- "...the external characteristics of the chief races of man must I think be older than his present geographical distribution..."
- "As to the theory of "*Natural Selection*" itself, I shall always maintain it to be actually yours & yours only. You had worked it out in details I had never thought of, years before I had a ray of light on the subject, & my paper would never have convinced anybody or been noticed as more than an ingenious speculation, whereas your book has revolutionized the study of Natural History, & carried away captive the best men of the present Age. All the merit I claim is the having been the means of inducing *you* to write & publish at once."

Wallace → Darwin: 30 Aug. 1868

- "Darwinianism was in the ascendant at Norwich [BAAS meeting]; (I hope you do not dislike the word, for we really *must* use it, —) and I think it rather disgusted some of the parsons, joined with the amount of *advice* they received from Hooker & Huxley."

Hooker: BAAS 1868 Presidential Address

- Referred to Wallace as "Mr. Darwin's true knight," and complimented his modesty.

Wallace → Darwin: 20 Jan. 1869

- "It will give me very great pleasure if you will allow me to dedicate my little book of Malayan Travels to you, although it will be far too small and unpretending a work to be worthy of that honour." [Fig. 3]

Darwin → Wallace: 22 Jan. 1869

- "Your intended dedication pleases me much & I look at it as a *great* honour & this is nothing more than the truth."

Darwin → Wallace: 5 March 1869

- "I was delighted at receiving your book this morning.... Blessings on you & your publisher for having the pages cut & gilded. — As far the Dedication, putting quite aside how far I deserve what you say, it seems to me decidedly the best expressed dedication, which I have ever met.... The dedication is a thing for my children's children to be proud of."

Darwin → Wallace: 22 March 1869

- "I have finished y^r book; it seems to me, excellent & at the same time most pleasant to read. That you ever returned alive is wonderful after all y^r risks from illness & sea voyages,... Of all the impressions which I have rec^d from y^r book the strongest is that y^r perseverance in the cause of science was heroic."

Wallace → Darwin: 24 Mar. 1869

- "Many thanks for your corrections in my book. It only shows what absurd errors a person having once written may go over & over again & never see." [Wallace responded to CD's comments]
- "In my forthcoming article in the 'Quarterly', I venture for the *first time* on some limitations to the power of natural selection."

Darwin → Wallace: 27 March 1869

- "I shall be intensely Curious to read the Quarterly: I hope you have not murdered too completely your own & my child."

Wallace (1869) *Quart. Rev.* 126: Geological Climates and the origin of species

- Wallace reviewed Charles Lyell's *Principles of geology* and *Elements of geology*. He

suggested that natural selection could not account for the human intellect, delicate hand movements, language, etc. Such features arose from “ a Power which has guided the action of laws in definite directions and for special ends.”

Darwin → Wallace: 14 April 1869

- “I have been wonderfully interested by your article, & I sh^d think Lyell will be much gratified by it. ... Your exposition of Nat. selection seems to me inimitably good; there never lived a better expounder than you...but you are the only man I ever heard of who persistently does himself an injustice & never demands justice. Indeed you ought ... to have alluded to y^r paper in Linn. Journal, ...”
- “I presume that y^r remarks on Man are those to which you alluded in y^r note. If you had not told me I sh^d have thought that they had been added by some one else. As you expected I differ grievously from you, & I am very sorry for it. I can see no necessity for calling in an additional & proximate cause in regard to Man. But the subject is too long for a letter.”

Wallace → Darwin: 18 April 1869

- “I can quite comprehend your feelings with regard to my ‘unscientific’ opinions as to man, because a few years back I should myself have looked at them as equally wild & uncalled for...My opinions on the subject have been modified solely by the consideration of a series of remarkable phenomena, physical & mental, which I have now had every opportunity of fully testing, & which demonstrate the existence of forces & influences not yet recognised by science. This will I know seem to you like some mental hallucination,... I am in hopes that you will suspend your judgment for a time till we exhibit some corroborative symptoms of insanity.”

Darwin → Wallace: 26 Jan. 1870

- “But I groan over Man – you write like a metamorphosed (in retrograde direction) naturalist, & you the author of the best paper that ever appeared in Anth. Review.” [Wallace, 1864, *Origin Human Races*, argued that intelligence, morality, social instincts of humans formed by natural selection. Wallace (1869) said these characters required the guidance of a higher intelligence.]

Darwin → Wallace: 31 Mar. 1870

- “I must add that I have re-read y^r article in the Anthropol. Rev. [Wallace, 1864] & I defy you to upset y^r own doctrine.”

Wallace (1870) *Contributions to the theory of natural selection. A series of essays.* Macmillan, London

- [P 4 of Preface:] “I have felt all of my life, and I still feel, the most sincere satisfaction that Mr. Darwin had been at work long before me, and that it was not left for me to attempt to write ‘The Origin of Species’.”

Darwin → Wallace: 20 April 1870

- “I have just received yr book & read the preface. There never has been passed on me, or indeed any one, a higher eulogium than yours. I wish that I fully deserved it. Your modesty and candour are very far from new to me. I hope it is a satisfaction to you to reflect, – & very few things in my life have been more satisfactory to me – that we have never felt jealousy towards each other, though in one sense rivals. I believe that I can say this of myself with truth, & I am absolutely sure that it is true of you.”

Linnean Society 50th Jubilee of reading joint essays, Feb. 1908

- [Wallace was presented with Darwin/Wallace Medal containing both of their portraits.]
- "...I can only say that I would have been fully content with a lower place than that accorded me, and feel that I attained to the honour more from the accident of my having lived to see the Celebration, than from any idea that I could have the slightest claim to be placed on anything approaching a level with Darwin." (*My Life*, 2nd ed., 1908: 397).

Who's who?

Bates, Henry Walter. 8 Feb. 1825-16 Feb. 1892. Naturalist, entomologist. Explored Amazon with A.R. Wallace 1848-50 and alone until 1859. Author of *Naturalist on the River Amazons* (1863). Developed concept of protective coloration now known as Batesian mimicry. Assistant Secretary of the Royal Geographical Society of London, 1864-92. FRS, 1881.

Blyth, Edward. 1810-1873. Curator of Zoology at Museum of Asiatic Society of Bengal, Calcutta 1844-1862. Called Darwin's attention to Wallace's 1855 paper. Returned to England and continued to write on zoological subjects and the origin of species.

Gladstone, William Ewart. 29 Dec. 1809-19 May 1898. Statesman, four times Prime Minister 1868-74, 1880-85, 1886, 1892-94. Considered greatest British statesman of 19th century. Visited Down House with T.H. Huxley 1876. Arranged Civil List pension for A.R. Wallace at CD's request 1880. FRS 1881.

Gray, Asa. 18 Nov. 1810-30 Jan. 1888. Botanist. Professor at Harvard 1842-72. First met CD at Hunterian Museum in London in 1839. CD's strongest supporter in America. Visited and stayed at Down House 24 Oct. 1868. Lifelong correspondent and friend of CD. CD dedicated *The Different Forms of Flowers* to "Professor Asa Gray ...As a Small Tribute of Respect and Affection". Author of *Manual of Botany of Northern United States* (Gray's Manual) 1848 and *Darwiniana* 1876.

Hooker, Sir Joseph Dalton. 30 Jun. 1817-10 Dec. 1911. Botanist. CD's closest friend and confidant. Assistant surgeon on Antarctic expedition of James Clark Ross 1838-43, published botanical results. Collected plants in Himalayas 1848-50. Specialist in plant taxonomy and plant geography. FRS 1847. President of Royal Society 1873-8. Knighted 1878 as K.C.S. I (Knight Commander of the Order of the Star of India). This honor is limited to 60 individuals and reflects service under hardship. Son of Sir William Hooker whom he succeeded as director of Royal Botanical Gardens (Kew Gardens) 1865-85. Supplied many botanical specimens to CD from Kew Gardens. CD and Hooker exchanged about 1400 letters. Helped Charles Lyell organize the joint reading of CD's and Wallace's paper at Linnean Society in 1858. Was pall bearer at CD's funeral 1882.

Huxley, Thomas Henry. 4 May 1825-29 Jun. 1895. Zoologist, comparative anatomist. Earned nickname of "Darwin's Bulldog" for his staunch defense of Darwin at Oxford debate with Bishop Samuel Wilberforce in 1860 and in published articles. Surgeon on HMS *Rattlesnake* 1846-1850 surveying east coast

of Australia. Studied marine invertebrates. FRS 1851. Lecturer/Professor, Royal School of Mines 1854-84. Hunterian Professor, Royal College of Surgeons 1862-9. Fullerian Professor of physiology at Royal Institution 1855-8, 1866-9. Close personal friend of CD from 1855. Frequent visitor to Down House. Was pall bearer at CD's funeral 1882. President of Royal Society 1883-1885. Author of *Evidence as to Man's Place in Nature* 1863, nine volumes of *Collected Essays* 1893-4.

Lubbock, Sir John, 4th Baronet. 30 Apr. 1834-28 May 1913. Banker, politician, naturalist. Son of elder Sir John Lubbock. Neighbor of CD until 1861. CD considered him a member of the family and trained his young neighbor in entomology and natural history. He became a strong supporter of CD and natural selection. He was elected as a Liberal Member of Parliament 1870 and 1874; became a spokesman for science. FRS 1858. Lubbock suggested that CD be given a Westminster Abbey funeral and helped organize the event. He was a pall bearer. Established the first Baron Avebury 1900.

Lyell, Sir Charles. 14 Nov. 1797-22 Feb. 1875. Geologist, lawyer. Geological mentor of CD, his close friend, correspondent, and supporter. Visited CD at Down House. Professor of Geology Kings's College, London 1831-3. President of Geological Society 1834-6, 1849-50. President of British Association for the Advancement of Science 1864. FRS 1826. Knighted 1848. Copley Medal 1858. Author of *Principles of Geology* 3 vol., 1831-3 which CD read during voyage of *Beagle*. Promoted uniformitarian geology. Paved the way for CD's acceptance in scientific society. Orchestrated the joint reading of CD's and Wallace's paper at Linnean Society in 1858. Traveled widely and published accounts of his visits to the United States. Author of *Elements of Geology* 1838, *The Geological Evidence of the Antiquity of Man* 1863.

Malthus, Thomas Robert. 13 Feb. 1766-23 Dec. 1834. Clergyman and political economist. Quantified the relationship between population growth and food supply in *Essay on the Principle of Population* 1798 which stimulated CD in 1838 (and A.R. Wallace 20 years later) to develop the concept of natural selection. FRS 1819.

Murray, John. 16 Apr. 1808-2 Apr. 1892. CD's main publisher from 1845. 50 Albemarle St. London. Personal friend invited to funeral of CD.

Silk, George. (18-19) Schoolmate, childhood friend and lifelong correspondent of Alfred Russel Wallace.

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References

- Bates, H W. 1862. *The Naturalist on the River Amazons*. 2 volumes. John Murray, London.
- Beddall, BG. (Ed.) 1969. *Wallace and Bates in the tropics: An introduction to the theory of natural selection*. Collier-Macmillan Ltd., London.
- Berra, TM. 2009. *Charles Darwin: The Concise Story of an Extraordinary Man*. Johns Hopkins University Press, Baltimore, MD.
- Berra, TM. 2013. *Darwin and his Children: His Other Legacy*. Oxford University Press, New York, NY.
- Berry, A. (Ed.) 2002. *Infinite Tropics: An Alfred Russel Wallace anthology*. Verso, London.
- Brackman, AC. 1980. *A Delicate Arrangement: The strange case of Charles Darwin and Alfred Russel Wallace*. Times Books, New York, NY.
- Brooks, JL. 1984. *Just Before the Origin*. Columbia University Press, New York, NY.
- Browne, J. 2002. *Charles Darwin: A Biography*. Vol. 2 *The Power of Place*. Knopf, New York.
- Burkhardt, F., et al. (Eds). 1985-2012. *The Correspondence of Charles Darwin*. 19 Volumes. Cambridge University Press, Cambridge. [This project is expected to include 30 volumes and be completed about 2025.]
- Camerini, JR. (Ed.) 2002. *The Alfred Russel Wallace Reader*. The Johns Hopkins University Press, Baltimore.
- Cope, ED. 1891. *Alfred Russel Wallace*. Appleton, New York.
- Darwin, C. 1839. *Journal of Researches into the Geology and Natural History of Various Countries Visited by H.M.S. Beagle Round the World Under the Command of Capt. Fitzroy, R.N.* Henry Colburn, London.
- Darwin, C. 1859. *On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life*. John Murray, London.
- Darwin, C. & Wallace, A. 1858. On the tendency of species to form varieties; and on the perpetuation of varieties and species by natural means of selection. *Journal of the Proceedings of the Linnean Society of London* 3(9): 45-62.
- Davies, R. 2008. *The Darwin conspiracy: origins of a scientific crime*. Golden Square Books, London.
- Davies, R. 2012. How Charles Darwin received Wallace's Ternate paper 15 days earlier than he claimed: a comment on van Wyhe and Rookmaaker (2012). *Biological Journal of the Linnean Society* 105: 472-477.
- Desmond, A., Moore J. 1991. *Darwin: The Life of a Tormented Evolutionist*. Warner Books, New York, NY.
- Fichman, M. 2004. *An Elusive Victorian: The evolution of Alfred Russel Wallace*. The University of Chicago Press, Chicago, IL.

- Gardiner, B G. 1995. The joint essay of Darwin and Wallace. *The Linnean* 11(1): 13-24.
- George, W. 1964. *Biologist Philosopher: A study of the life and writing of Alfred Russel Wallace*. Abelard-Schuman, London.
- Holt, B G, and 14 co-authors. 2013. An update of Wallace's zoogeographic regions of the World. *Science* 339: 74-78.
- Huxley, TH. 1860. Darwin on the origin of species. *Westminster Review* 17: 541-70.
- Mallet, J. 2009. Alfred Russel Wallace and the Darwinian species concept: his paper on the swallowtail butterflies (Papilionidae) of 1865. Pp 35-47 in D'Elia G. *Una celebración de los aniversarios darwinianos de 2009*. *Gayana* 73 (2); Suplemento.
- Marchant, J. 1916. *Alfred Russel Wallace, Letters and Reminiscences*. 2 volumes. Cassell and Company, London.
- McCalman, I. 2009. *Darwin's Armada: four voyages and the battle for the theory of evolution*. W. W. Norton, New York, NY.
- McKinney, HL. 1972. *Wallace and natural selection*. Yale University Press, New Haven, CT.
- Porter, DM. 2012. Why did Wallace write to Darwin? *The Linnean* 28(1): 17-25.
- Quammen, D. 1996. *The song of the dodo: Island biogeography in an age of extinctions*. Scribner, New York, NY.
- Raby, P. 2001. *Alfred Russel Wallace: a life*. Princeton University Press, Princeton, NJ.
- Severin, T. 1977. *The Spice Islands: the quest for Alfred Wallace, the man who shared Darwin's discovery of evolution*. Carroll & Graf Publ. Inc. New York, NY.
- Shermer, M. 2002. *In Darwin's Shadow: the Life and Science of Alfred Russel Wallace*. Oxford University Press, Oxford.
- Slotten, RA. 2004. *The Heretic in Darwin's court: the life of Alfred Russel Wallace*. Columbia University Press, New York, NY.
- Smith, CH. (Ed.). 1991. *Alfred Russel Wallace: An anthology of his shorter writings*. Oxford University Press, Oxford.
- Smith, CH., Beccaloni, G. (Eds). 2008. *Natural Selection & Beyond: The Intellectual Legacy of Alfred Russel Wallace*. Oxford University Press, Oxford.
- Smith, CH., Derr M. (Eds.). 2013. *Alfred Russel Wallace's 1886-1887 Travel Diary: The North American Lecture Tour*. Siri Scientific Press, Manchester.
- Stott, R. 2012. *Darwin's ghosts: The secret history of evolution*. Spiegel & Grau, New York, NY.
- van Oosterzee, P. 1997. *Where worlds Collide: The Wallace Line*. Reed, Melbourne.
- van Wyhe J, Rookmaaker K. 2012. A new theory to explain the receipt of Wallace's Ternate essay by Darwin in 1858. *Biological Journal of the Linnean Society* 105: 249-252.

- Wallace, AR. 1853. *A narrative of travels on the Amazon and Rio Negro, with an account of the native tribes, and observations on the climate, geology and natural history of the Amazon valley*. Reeve & Co., London.
- Wallace, AR. 1855. On the law which has regulated the introduction of new species. *Annals and Magazine of Natural History* 16: 184-96.
- Wallace, AR. 1860. On the zoological geography of the Malay Archipelago. *Journal of the Proceedings of the Linnean Society, Zoology*. 4: 172-184.
- Wallace, AR. 1864. The origin of human races and the antiquity of man deduced from the theory of "natural selection". *Anthropological Review* 2: clvii-clxx.
- Wallace, AR. 1869a. *The Malay Archipelago: The land of the orang-utan and the bird of paradise; a narrative of travel with studies of man and nature*. 2 volumes. Macmillan & Co, London.
- Wallace, AR. 1869. Sir Charles Lyell on geological climates and the origin of species [review of *Principles of Geology* 10th ed and *Elements of Geology* 6th ed.]. *Quarterly Review* 126: 359-394.
- Wallace, AR. 1870. *Contributions to the theory of natural selection: A series of essays*. Macmillan & Co., London.
- Wallace, AR. 1876. *The Geographical distribution of animals: with a study of the relations of living and extinct faunas as elucidating the past changes of the earth's surface*. 2 volumes, Macmillan & Co. London.
- Wallace, AR. 1889. *Darwinism: An exposition of the theory of natural selection with some of its applications*. Macmillan & Co., London.
- Wallace, AR. 1905. *My Life: A Record of Events and Opinions*. 2 volumes. Dodd, Mead, & Co. New York, NY.
- Wallace, AR. 1908, 2nd ed., revised and abridged in one volume. *My Life: A Record of Events and Opinions*. Chapman and Hall, London.
- Williams-Ellis, A. 1966. *Darwin's moon: A Biography of Alfred Russel Wallace*. Blackie, London.
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